Intell-Check Service Manual

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INDICATOR HOUSING

Before opening the stainless steel indicator housing, make sure it is dry. If necessary wipe the housing dry, paying particular attention to the joint between the front panel and rear housing.

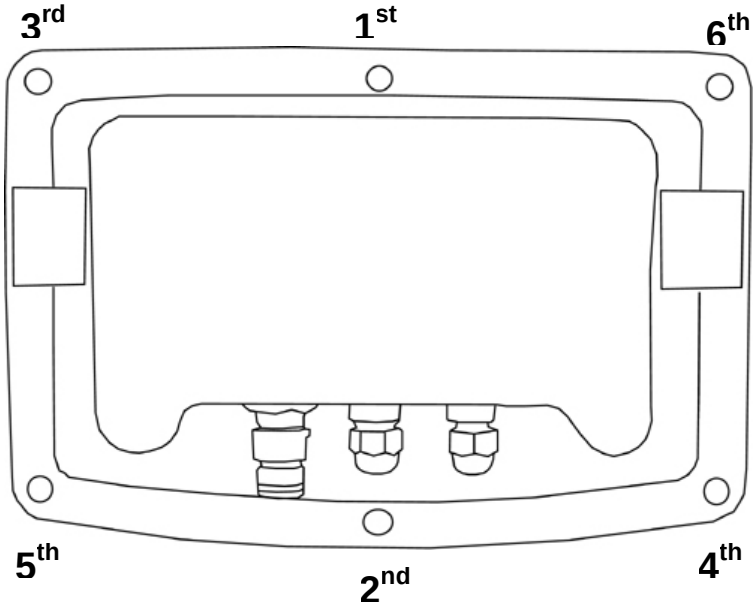
The re-assembly instructions should be accurately followed to ensure the IP rating is maintained in service.

NOTE: There are no user serviceable parts inside the indicator and all service work should be carried out by the technical staff of your supplier.

RE-ASSEMBLY INSTRUCTIONS:

Position the front panel onto the rear housing and fit all six fixing screws finger tight. Tighten the screws in the order shown in the diagram below to a torque of 12 kgf-cm.
NOTE: Over tightening the screws could impair the IP rating.

Tightening order:



BEFORE USING THE SCALE

To enable you to use this scale correctly, we suggest that you read this manual carefully.

INSTRUCTIONS FOR USE

1. The load placed on the weigh pan must NOT exceed the maximum weighing capacity of the scale.
2. Protect the scale from high temperatures.
3. Avoid objects impacting with the scale. Do not drop loads onto the scale or subject the weigh pan to any strong shock loads.

PREPARING TO USE THE SCALE

1. Put the scale on a firm level surface for accurate weight readings.
2. Protect the scale from direct sunlight and drafts.
3. Use a separate power socket, if possible, when re-charging the indicator.
4. For maximum stability and accuracy switch on the indicator for 15~20 minutes before operation.
5. Once the scale has been powered on, it will go through a LCD display test and re-zero, ready for use.
6. All goods weighed / counted should be placed in the centre of weigh pan for best accuracy. The overall dimensions of the goods being weighed / counted should not exceed the dimensions of the weigh pan.
7. Please note when symbol flashes on the display, the battery needs to be recharged.

CHAPTER 1 INTRODUCTION

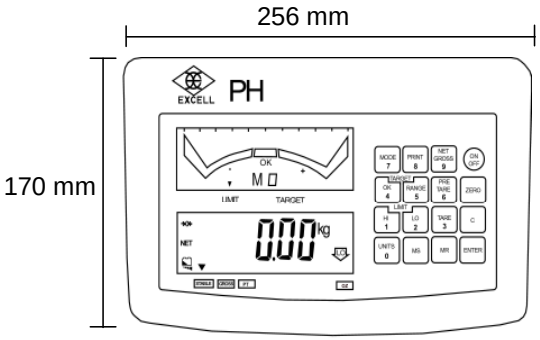
1-1 Features

- **IP 67 waterproof:** moisture-proof, mist-proof, with IP67 waterproof and dustproof
- **High resolution:** the maximum external resolution is 1/30000, and the internal is 1/300000 (Input voltage should be over 6mV)
- **Adjustable weighing speed:** three weighing speed modes (fast, moderate, and slow) provided
- **Selectable units modes:** Kilogram (kg), gram (g), pound (lb), and ounce (oz) weighing modes
- **HI, OK, LO indication:** Large LCD display with HI, OK, LO indication and the signals for Relay output with max. current 7A, max. voltage 265Vac, 30Vdc
- **Practical functions:** 10 preset settings, Percentage display, Simple / Limit / Target operation modes, Pre-tare function, Net/Gross switch function, Auto backlight, RTC setting and Auto power-off timer etc.
- **Others:** Auto calibration, Auto zero tracking, Low battery indication, Adjustable gravity value, and Linearity calibration.
- Built-in bi-directional RS-232 interface

1-2 Specifications

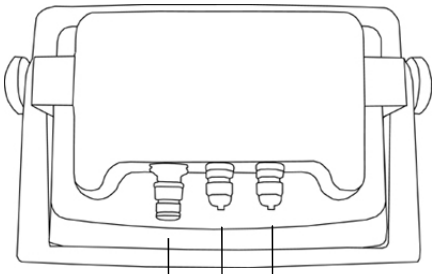
- Analog Input and A/D Conversion: Input Sensitivity 0.18μ V/d or more.
- Input Signal Range: -2mV~+16mV
- Adjustable Zero Range: -1mV~+5mV
- Load Cell Excitation: 5V DC
- Non-linearity: 0.01% of full scale
- A/D Resolution: 1,000,000 counts (Max.)

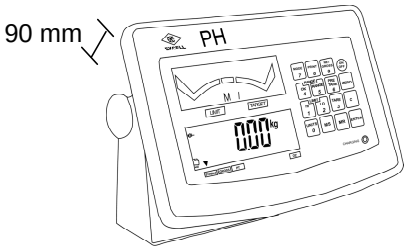
1-3 Scale Appearance



The package includes:
1.Indicator 1 off
2.Power Cable 1 off
3.User Manual 1 off

When you unpack the indicator and find any of the above items are missing, please contact your supplier.





RS-232 interface connection
Load cell connection
Power cable

Only the cables with ψ 3~ψ 5.5mm caliber can be used, otherwise the waterproof design will be damaged

1-4 Power Supply

Power Supply Selection

1. 6V / 4.5Ah Rechargeable battery
2. AC adaptor DC 9V

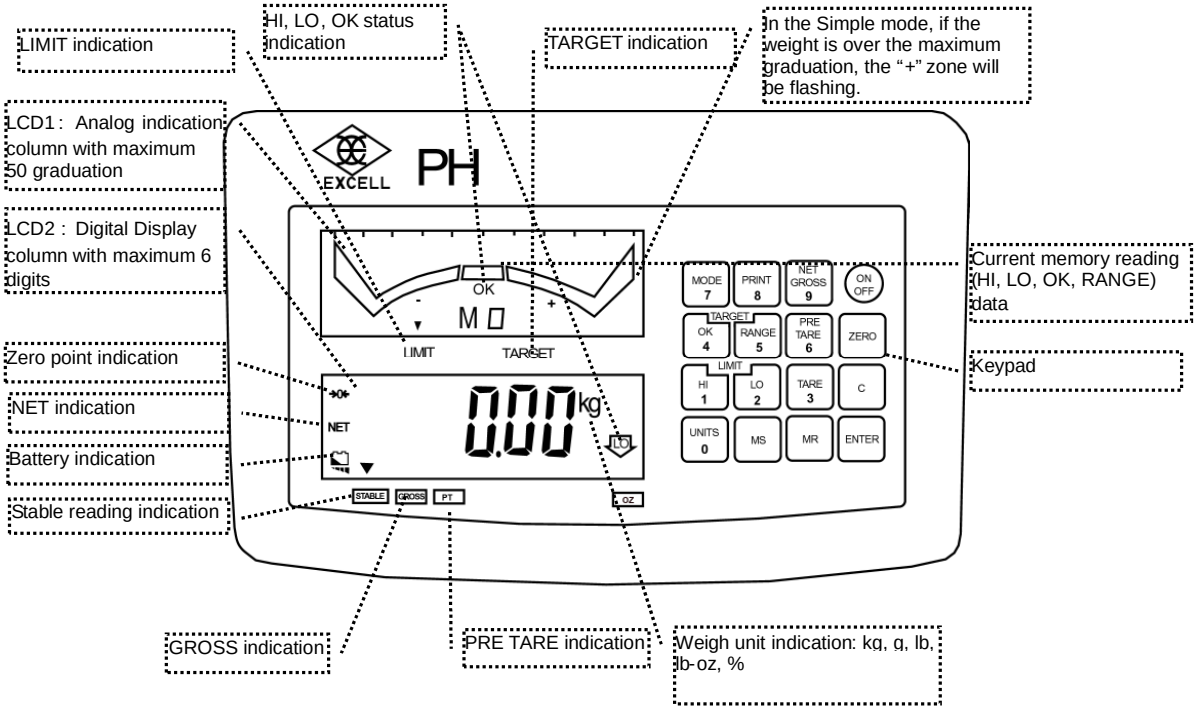
Power Consumption

Approximately DC 19 mA (Indicator)
Approximately DC 38 mA (Indicator + Display backlight)
Approximately DC 70~80 mA (Indicator + Display backlight + Relay)

Low Battery Warning

Please note when the ( ) symbol keeps flashing on the display, the batteries should be recharged.

1-5 Explanation of Display



1-6 Explanation of Keyboard

Press to switch the indicator On/Off.

Unload the weight pan, and then press the key to zero the scale.

ⓘ Zero setting is possible only within a certain range. The auxiliary function of the zero key is the tare function.

Press this button to clear the setting or the values entered from the keypad.

Press this button to accept data entered from the keypad.

Digit: 9

Press this button to switch between the “Net value” and the “Gross value” (This button is functional only under the tare or pre-tare modes).

ⓘ When the ▼ indication shows upon “GROSS” on the display, all the keypads are not functional except the

key and the

key.

Digit: 6

Press this button to deduct the weight of the container via entering the weight value directly.

Digit: 3

Press this button to deduct the weight of container.

Press this button to recall the memory.

Digit 8
Press this button to output the displayed values via the built-in interface into a printer or a computer.

Digit 5
In Target mode, press this button to pre-set a “Range” of weight values, which are acceptable upper and lower limits.
(target weight + upper range □ range □ target weight – lower range).

Digit 2
In Limit mode, press this button to input “Low” value, so that the weighing result cannot be smaller than this value.

Press this button to store HI, LO, OK and Range settings or exit the setting mode.

Digit 7
Press this button to choose different weighing modes, including Simple, Limit, and Target weight modes.

Digit 4
In Target mode, press this button to input weight value which meets the user’s requirement.

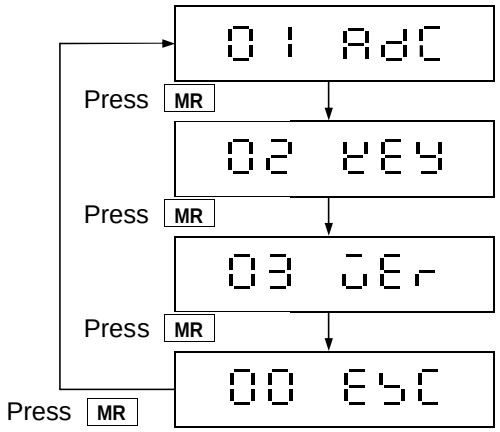
Digit 1
In Limit mode, press this button to input “HI” value, so that the weighing result cannot be greater than this value.

Digit 0
Press this button to select the different weight units.

1-7 Self-diagnosis Mode

(1) Set the jumper SWA1 on the main board to the ADJ position. Press **ON/OFF** key to test the LCD display if the LCD display normally.

(2) Press **ON/OFF** key, and hold **MODE** key then press **ON/OFF** key. The LCD shows 01 AdC and enter the Self-diagnosis mode.



01 AdC *Internal value mode* (Before testing, the Load cell should be connected)

Press **Enter** key and the LCD shows the internal value.

(1) Check the internal value is in the normal range (the internal value should be in the range of 100000 ~ 400000 when free of loading)

(2) Check the backlight

02 KEY *Keypad testing mode*

Press **Enter** key and the LCD shows KEY 25

Refer to Appendix 2 Button code for the keypad code

Press **MS** key to back to the menu level 02 KEY

03 SEr *Software version*

Press **Enter** key and the LCD shows the software version 02006 ,

Press **MS** key to back to the menu level 03 SEr

00 EsC *Exit the self-diagnosis mode*

Press **Enter** key to exit the self-diagnosis mode and the system restarts.

1-8 Error Message

E0 ⇒ EEPROM is not on board or the wiring around EEPROM is malfunctioned.

E1 ⇒ Zero is higher than the zero rang when switching the indicator on.

E2 ⇒ Zero is lower than the zero rang when switching the indicator on.

E4 ⇒ Internal value is unstable.

E9 ⇒ ADIC malfunction (cannot read AD value). The cable of the load cell does NOT connected appropriately to the indicator. EX: Sensing inputs (+/-) are not connected to the load cell.

oL ⇒ The weight of the object is over the max. capacity + 9 division

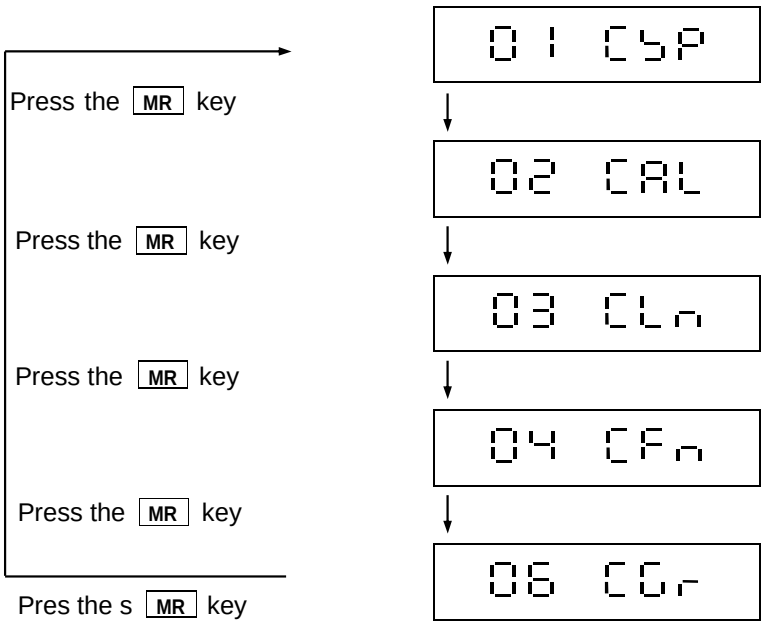
oF ⇒ ADIC is over the maximum resolution range.

1-9 Weight Unit

(kg)	1 g = 0.001 kg
(g)	1 g = 1 g
(lb)	1 g = 0.002204623 lb
(lb,oz)	1 g = 0.03527396 oz
(oz)	1 g = 0.03527396 oz

CHATPER 2 SERVICE MODE ACCESS

- Set the jumper SWA1 on the main board to the ADJ position (EEPROM UNLOCK), Switch the scale on. The display showing 01 CAP means the scale is ready for the calibration.
- After finishing the calibration, please set the jumper SWA1 to the LOCK position.
- If the user set the jumper SWA1 to the LOCK position during the calibration, the scale will exit the service mode automatically.



01 CAP ⇒ Capacity Configuration	04 CFn ⇒ Function Setting
02 CAL ⇒ Weight Calibration	06 CGr ⇒ Gravity Setting
03 CLn ⇒ Linearity Calibration	

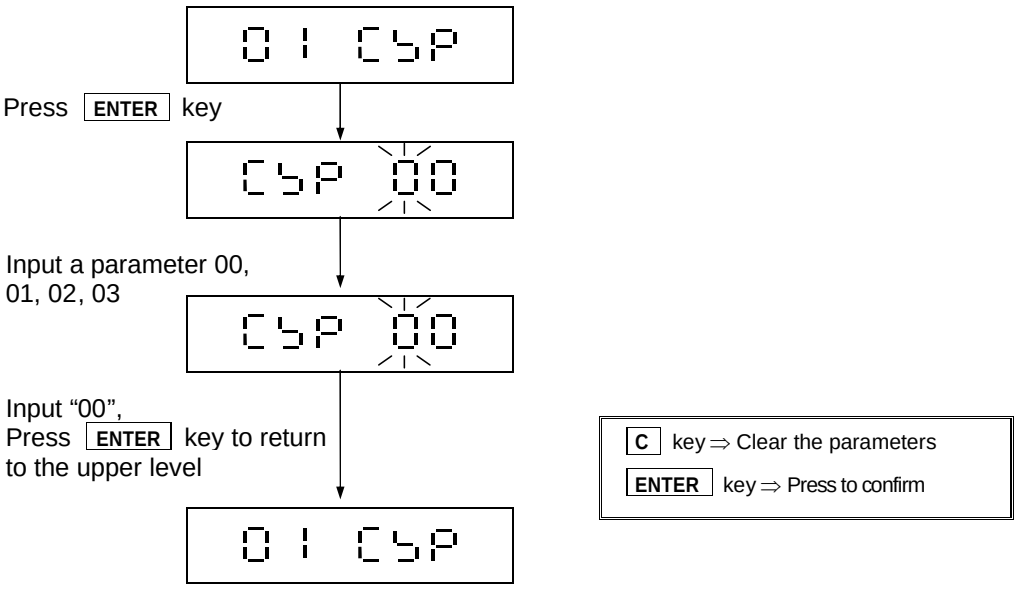
2-1 Capacity Configuration 01 CAP

- Capacity configuration includes

  Weight Units Setting CAP 01

  Customized Weight Units Setting CAP 02

  Dividing Point Setting of Each Unit Range CAP 03


01 CAP
Press ENTER key
CAP 00
Input a parameter 00, 01, 02, 03
CAP 00
Input "00", Press ENTER key to return to the upper level
01 CAP
C key ⇒ Clear the parameters
ENTER key ⇒ Press to confirm

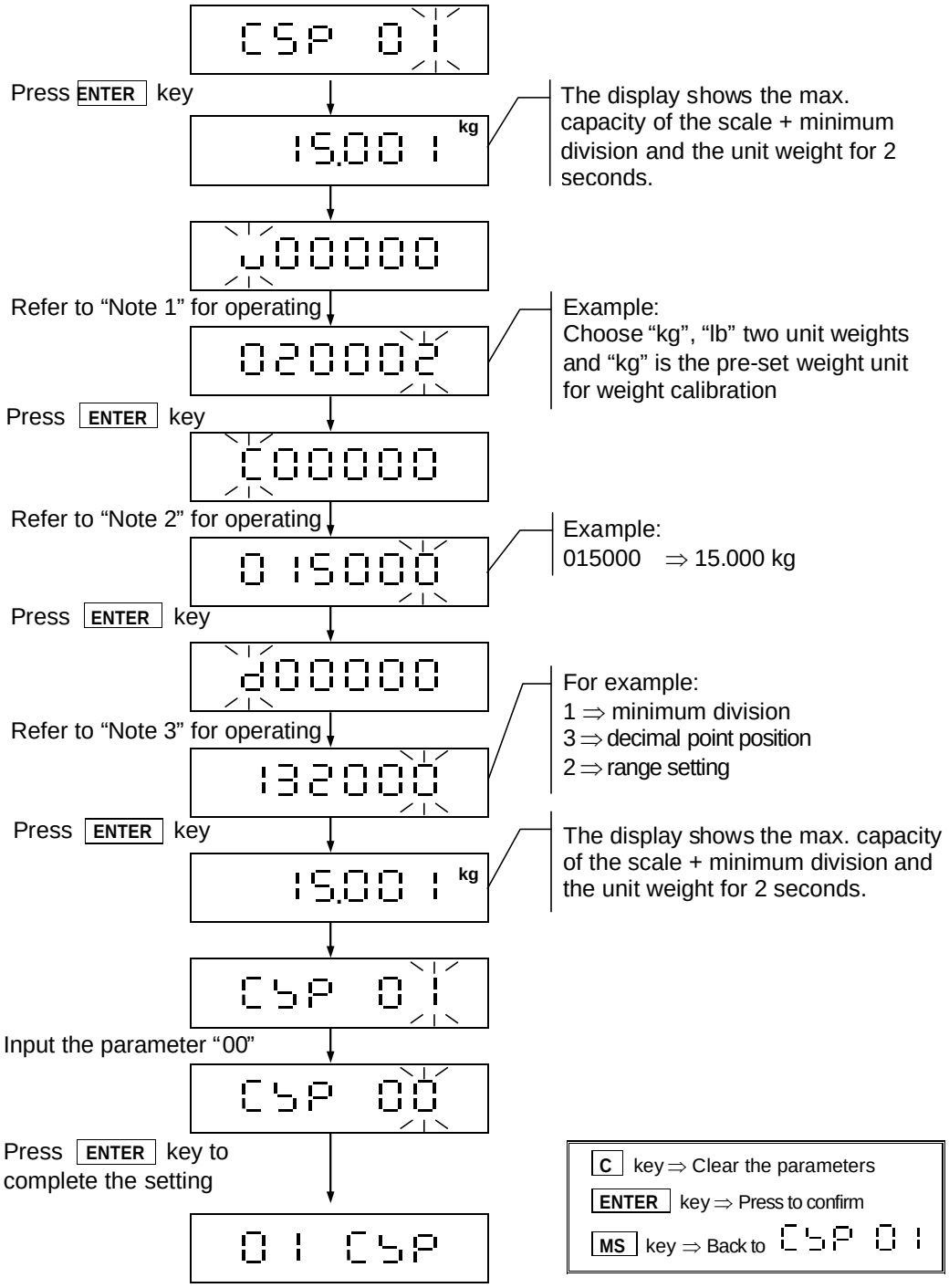
CAP 00 ⇒ Return to the Upper Level

CAP 01 ⇒ Weight Units Setting

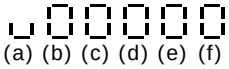
CAP 02 ⇒ Customized Weight Units Setting

CAP 03 ⇒ Dividing Point Setting of Each Unit

2-1-1 Weight Units Setting CSP 01


CSP 01
Press ENTER key
15.001 kg
The display shows the max. capacity of the scale + minimum division and the unit weight for 2 seconds.
U00000
Refer to "Note 1" for operating
020002
Example:
Choose "kg", "lb" two unit weights and "kg" is the pre-set weight unit for weight calibration
Press ENTER key
C00000
Refer to "Note 2" for operating
0 15000
Example:
015000 ⇒ 15.000 kg
Press ENTER key
d00000
Refer to "Note 3" for operating
132000
For example:
1 ⇒ minimum division
3 ⇒ decimal point position
2 ⇒ range setting
Press ENTER key
15.001 kg
The display shows the max. capacity of the scale + minimum division and the unit weight for 2 seconds.
CSP 01
Input the parameter "00"
CSP 00
Press ENTER key to complete the setting
01 CSP
C key ⇒ Clear the parameters
ENTER key ⇒ Press to confirm
MS key ⇒ Back to CSP 01

Note 1


(a) (b) (c) (d) (e) (f)

The users can set up the different weight units in various orders according to their preference.

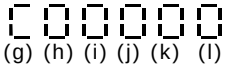
The description of the parameters

0 ⇒ kg	Parameter “0” represents “kg” weight unit
1 ⇒ g	Parameter “1” represents “g” weight unit
2 ⇒ lb	Parameter “2” represents “lb” weight unit
4 ⇒ lb, oz	Parameter “4” represents “lb/oz” weight unit
5 ⇒ oz	Parameter “5” represents “oz” weight unit

(a) ⇒ The first weight unit (only “kg”, “g”, or “lb” are available to choose from. Please select one of the parameters 0, 1, or 2)
(b) ⇒ The second weight unit (select one of the parameters 0 ~ 5)
(c) ⇒ The third weight unit (select one of the parameters 0 ~ 5)
(d) ⇒ The fourth weight unit (select one of the parameters 0 ~ 5)
(e) ⇒ The fifth weight unit (select one of the parameters 0 ~ 5)
(f) ⇒ The amount of the weight units selected (depends on the total number of units)

For example:
Choose “kg”, “lb” two unit weights and “kg” is the pre-set weight unit for weight calibration. In this step, the parameters “**020002”** should be input.

Note 2

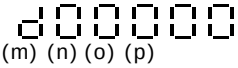

(g) (h) (i) (j) (k) (l)

Please enter the maximum capacity of the scale, total are 6 digits (exclude 9d)

For example:

15.000 kg ⇒ enter 015000 1500.0 g ⇒ enter 015000 6.000 lb ⇒ enter 006000

Note 3


(m) (n) (o) (p)

(m) ⇒ Minimum division selection(select one of parameters 1, 2, or 5)

(n) ⇒ The decimal point position (0 ~ 5)

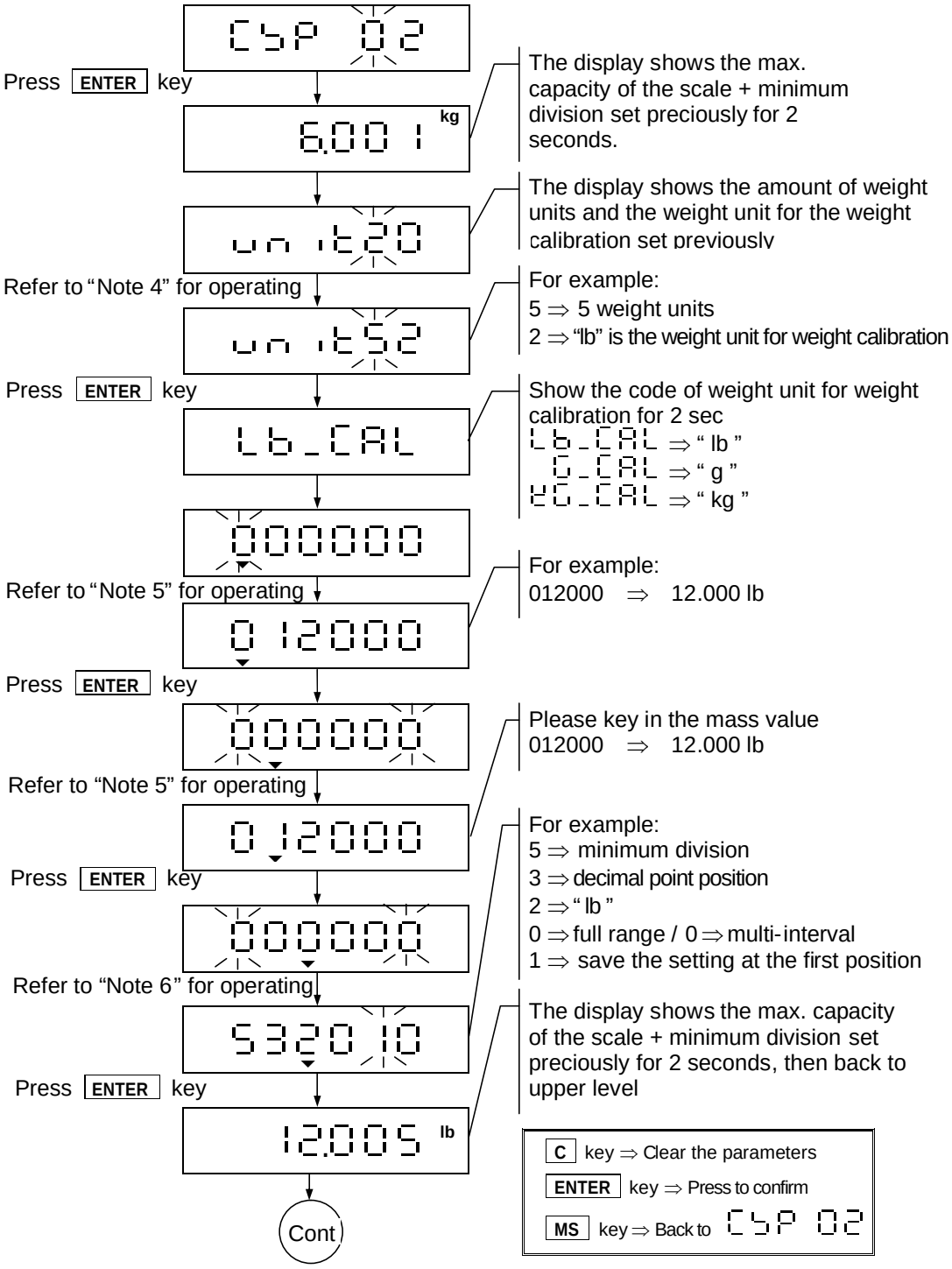
For example: 15.000 kg ⇒ enter 3 1500.0 g ⇒ enter 1 6.000 lb ⇒ enter 3

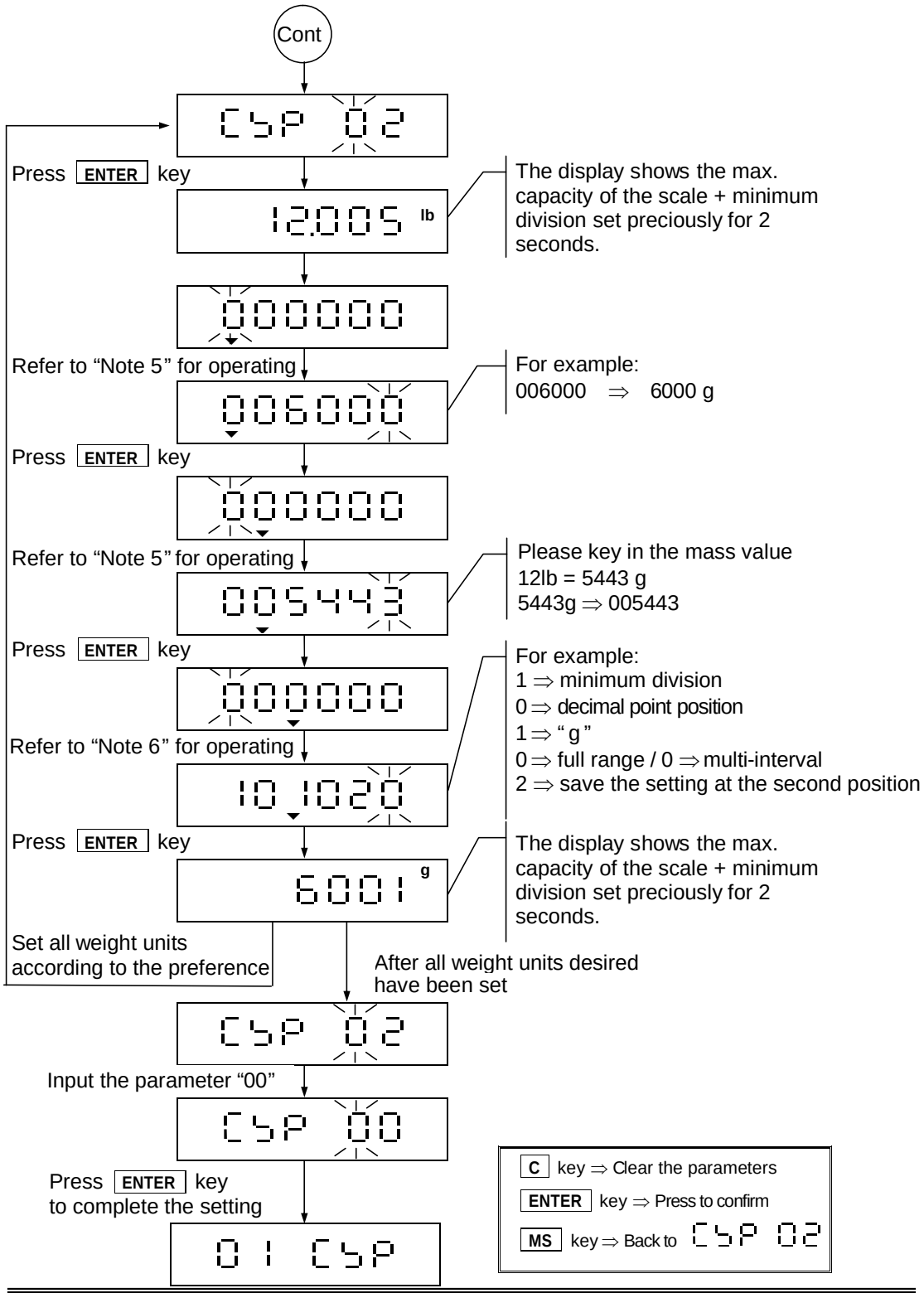
(o) ⇒ range setting (select one of parameters 0, 1, 2, or 3)

For example: 0 ⇒ full range, 1 ⇒ full range, 2 ⇒ dual range(divided at 1/2 of the full scale), 3 ⇒ triple range(divided at 1/3 of the full scale, 2/3 of the full scale)

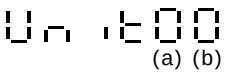
(p) ⇒ Parameter description: 0 ⇒ multi-interval, 2 ⇒ multi-range

2-1-2 Customized Weight Unit Setting CSP02 (no resolution limit)


CSP 02
Press ENTER key
6.001 kg
The display shows the max. capacity of the scale + minimum division set preciously for 2 seconds.
un it20
The display shows the amount of weight units and the weight unit for the weight calibration set previously
Refer to "Note 4" for operating
un it52
For example:
5 ⇒ 5 weight units
2 ⇒ "lb" is the weight unit for weight calibration
Press ENTER key
Lb_CAL
Show the code of weight unit for weight calibration for 2 sec
Lb_CAL ⇒ " lb "
G_CAL ⇒ " g "
KG_CAL ⇒ " kg "
000000
Refer to "Note 5" for operating
0 12000
For example:
012000 ⇒ 12.000 lb
Press ENTER key
000000
Please key in the mass value
012000 ⇒ 12.000 lb
Refer to "Note 5" for operating
0 12000
Press ENTER key
000000
Refer to "Note 6" for operating
5320 10
For example:
5 ⇒ minimum division
3 ⇒ decimal point position
2 ⇒ " lb "
0 ⇒ full range / 0 ⇒ multi-interval
1 ⇒ save the setting at the first position
Press ENTER key
12.005 lb
The display shows the max. capacity of the scale + minimum division set preciously for 2 seconds, then back to upper level
Cont
C key ⇒ Clear the parameters
ENTER key ⇒ Press to confirm
MS key ⇒ Back to CSP 02


Cont
CSP 02
Press ENTER key
12.005 lb
The display shows the max. capacity of the scale + minimum division set preciously for 2 seconds.
000000
Refer to “Note 5” for operating
006000
For example:
006000 ⇒ 6000 g
Press ENTER key
000000
Refer to “Note 5” for operating
005443
Please key in the mass value
12lb = 5443 g
5443g ⇒ 005443
Press ENTER key
000000
For example:
1 ⇒ minimum division
0 ⇒ decimal point position
1 ⇒ “ g ”
0 ⇒ full range / 0 ⇒ multi-interval
2 ⇒ save the setting at the second position
Refer to “Note 6” for operating
10 1020
Press ENTER key
6001 g
The display shows the max. capacity of the scale + minimum division set preciously for 2 seconds.
Set all weight units according to the preference
After all weight units desired have been set
CSP 02
Input the parameter “00”
CSP 00
Press ENTER key to complete the setting
01 CSP
C key ⇒ Clear the parameters
ENTER key ⇒ Press to confirm
MS key ⇒ Back to CSP 02

Note 4



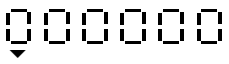
(a) (b)

(a) ⇒ The amount of the weight units (Max: 5, key in 1 ~ 5)

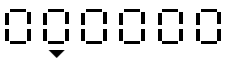
(b) ⇒ The weight unit for weight calibration (choose from “kg”, “g”, “lb”, key in 0, 1, or 2)

Parameter description:
0 ⇒ kg, 1 ⇒ g, 2 ⇒ lb

Note 5



(c) (d) (e) (f) (g) (h)



(i) (j) (k) (l) (m) (n)

c ~ h set the max. capacity in 6 digits

i ~ n set the mass value for weight calibration in 6digits

The max. capacity needs to be presented based on decimal system.

For example: How to calculate the maximum capacity and the mass value based on the different types of weight unit.

A. Choose “lb” as the weight unit for weight calibration

① The first weight unit setting: 12.000 l b / 0.005 lb (the max. capacity/ division)

⇒ Enter the max capacity 012000 at (c) ~ (h)

⇒ Enter the mass value 012000 at (i) ~ (n)

② The second weight unit setting “g” :
0.002204623 lb = 1 g
12 lb = 5443 g. Take l 6000 g as the max capacity
6000 g / 2 g (the max. capacity/ division),
⇒ Enter the max capacity 006000 at (c) ~ (h)
⇒ Enter the mass value 005443 at (i) ~ (n)

③”lb/oz” (hexadecimal notation system):
12._0.00 lb / 0.05 oz (the max. capacity/ division)
12 lb = 12×16 (oz) = 192.00 oz
⇒ Enter the max capacity 019200 at (c) ~ (h)
⇒ Enter the mass value 019200 at (i) ~ (n)

④”oz” :
12 lb = 192.00 oz ,
Take 200.00 oz as the max. capacity
200.00 oz / 0.05 oz (the max. capacity/ division)
⇒ Enter the max capacity 020000 at (c) ~ (h)
⇒ Enter the mass value 019200 at (i) ~ (n)

B. Choose “kg” as the weight unit for the weight calibration

① The first weight unit setting: 6.000 kg / 0.002 kg

⇒ Enter the max capacity 006000 at (c) ~ (h)
⇒ Enter the mass value 006000 at (i) ~ (n)

② The second weight unit setting “lb/oz” (hexadecimal notation system):
0.001 kg = 0.002204623 lb
6 kg = 6×2.204623 (lb) = 13.227738 lb. Take 12 lb as the max capacity
12._0.00 lb / 0.08 oz (minimum division=8, decimal point position=2)
12 lb ×16 (oz) = 192.00 oz ⇒ Enter the max capacity 019200 at (c) ~ (h)
13.227738 lb ×16 (oz) = 211.64 oz ⇒ Enter the mass value 021164 at (i) ~ (n)

Note 6

(o) (p) (q) (r) (s) (f)

(o) ⇒ Minimum division
Parameter description:

Decimal system:
Input 1, 2, or 5 as the minimum division for the weight value

Hexadecimal notation system:
Input 1, 2, 4, or 8 as the minimum division for the weight value

(p) ⇒ Decimal point position
Parameter description:

Decimal system:
0 ⇒ 0
1 ⇒ 0.0
2 ⇒ 0.00
3 ⇒ 0.000
4 ⇒ 0.0000
5 ⇒ 0.00000

Hexadecimal notation system:
0 ⇒ 0._0
1 ⇒ 0._0.0
2 ⇒ 0._0.00
3 ⇒ 0._0.000

(q) ⇒ Weight unit displayed

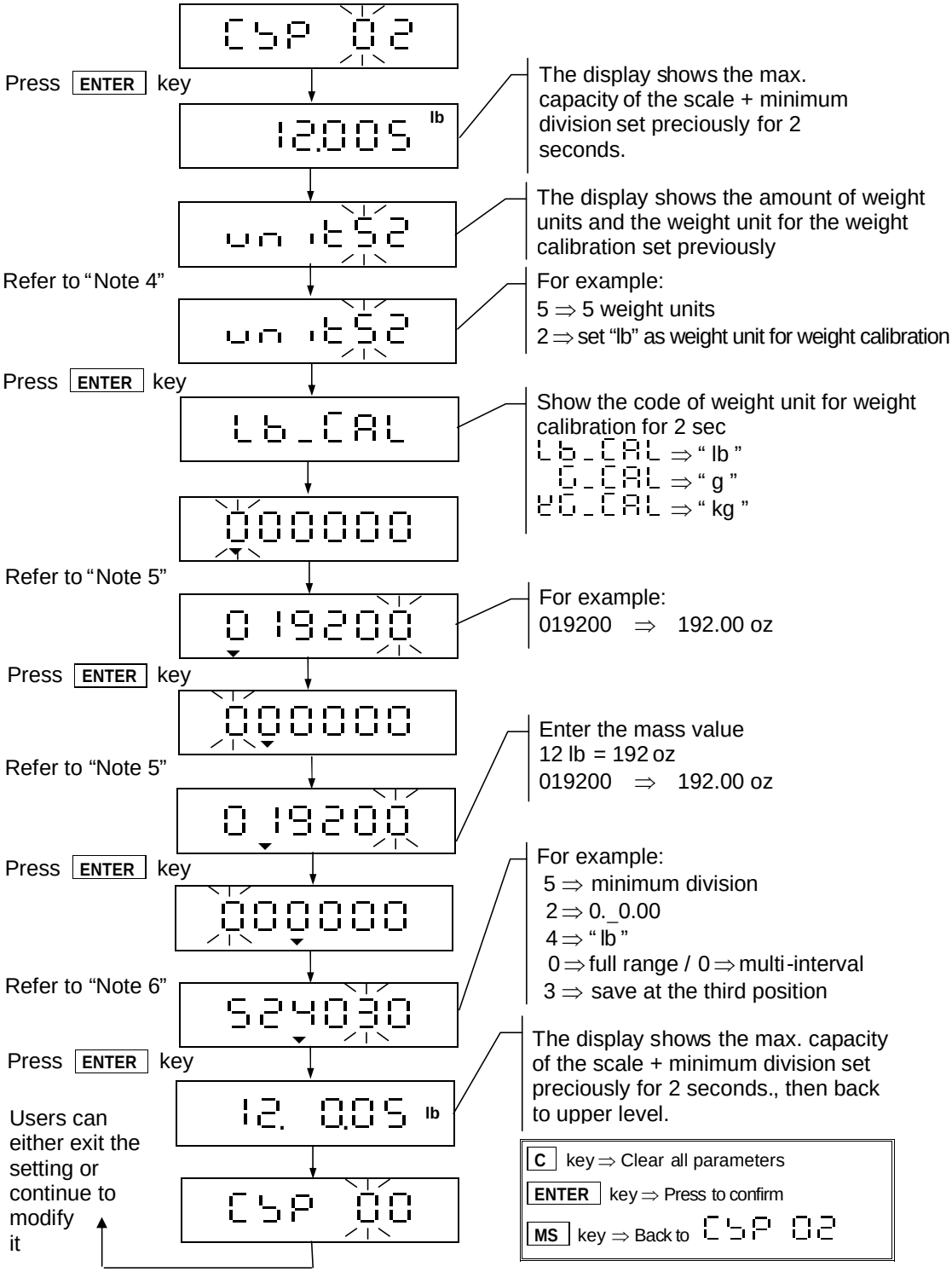
Parameter	0	1	2	4	5
Unit	kg	g	lb	lb,oz	oz
Notation system	10	10	10	16	10
symbol	kg	g	lb	lb	The 7th ▼ indication

(r) ⇒ Dividing point (Input the parameter 0, 1, 2, or 3)
Parameter description:
0 ⇒ full range
1 ⇒ full range
2 ⇒ dual range(divided at 1/2 of the full scale)
3 ⇒ triple range(divided at 1/6 of the full scale、and 2/3 of the full scale)

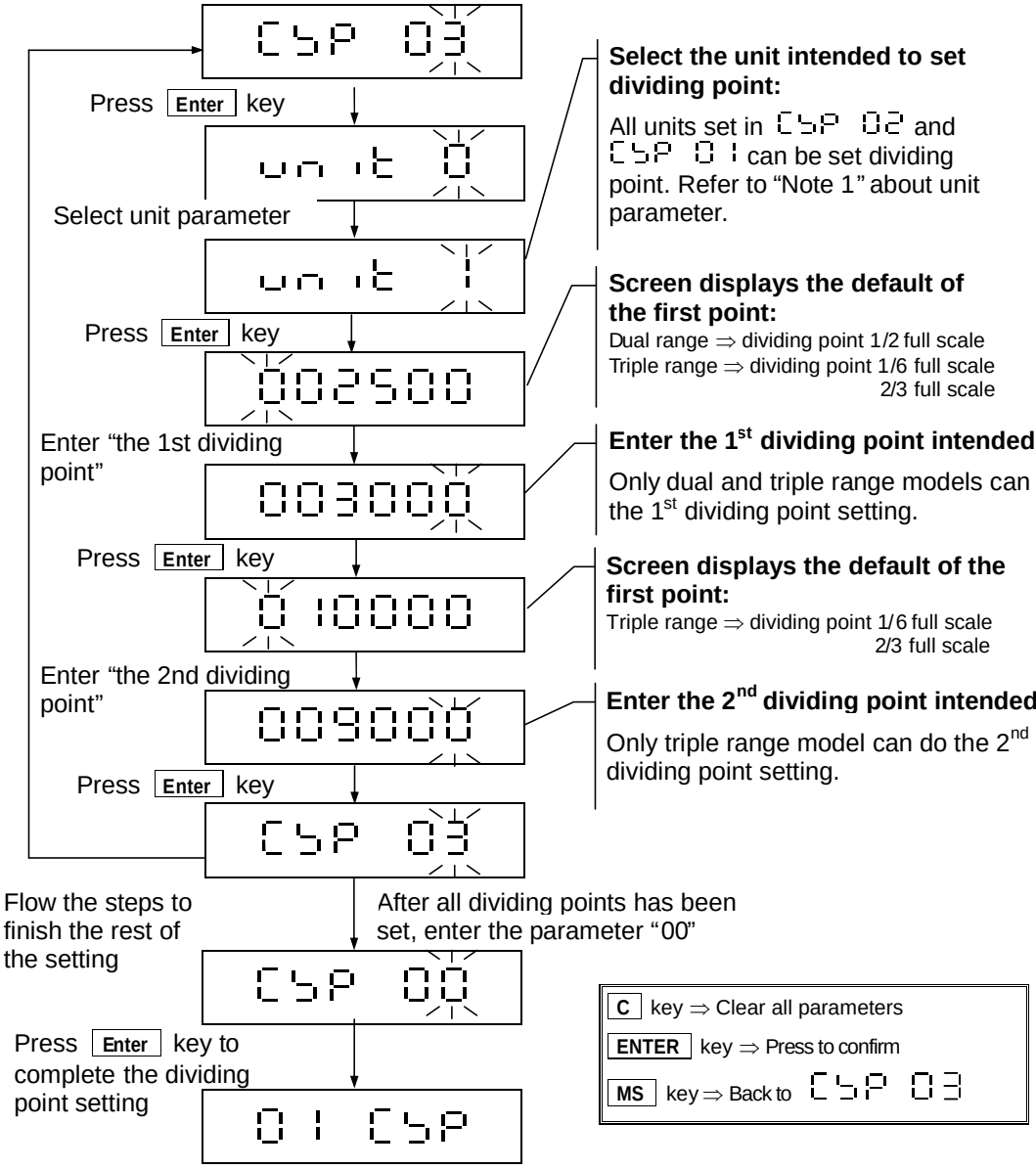
(s) ⇒ Save the weight units at preferred positions (no more than the number of the set weight units)
Parameter description:
1 ⇒ the first position (the weight calibration unit)
2 ⇒ the second position
3 ⇒ the third position
4 ⇒ the fourth position
5 ⇒ the fifth position

(f) ⇒ Parameter description: 0 ⇒ multi-interval, 2 ⇒ multi-range

Modify “Customized Weight Units” Setting

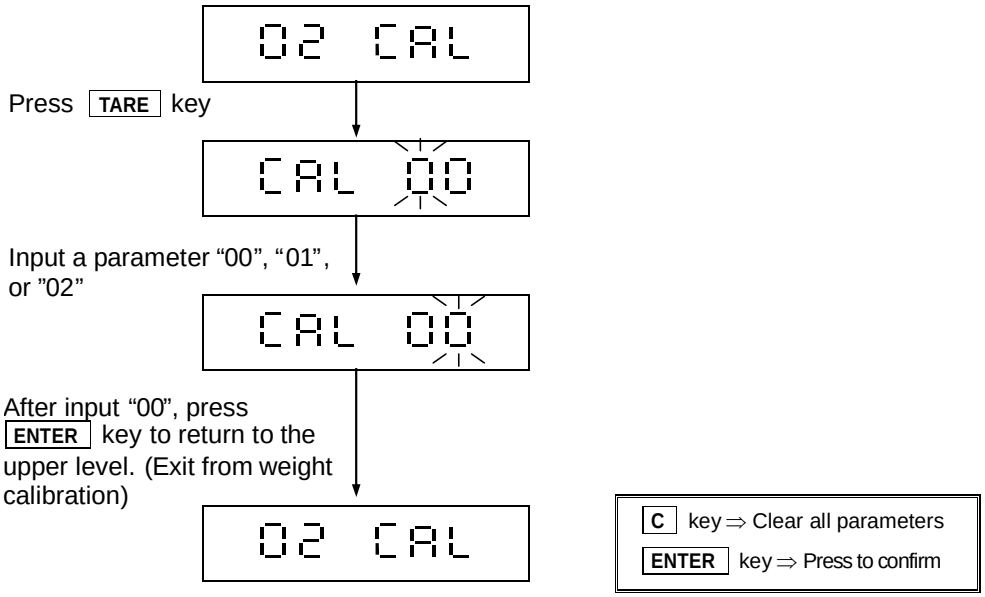

CSP 02
Press ENTER key
12.005 lb
The display shows the max. capacity of the scale + minimum division set preciously for 2 seconds.
un it S2
The display shows the amount of weight units and the weight unit for the weight calibration set previously
Refer to “Note 4”
un it S2
For example:
5 ⇒ 5 weight units
2 ⇒ set “lb” as weight unit for weight calibration
Press ENTER key
Lb_CAL
Show the code of weight unit for weight calibration for 2 sec
Lb_CAL ⇒ “ lb ”
G_CAL ⇒ “ g ”
KG_CAL ⇒ “ kg ”
000000
Refer to “Note 5”
0 19200
For example:
019200 ⇒ 192.00 oz
Press ENTER key
000000
Refer to “Note 5”
0 19200
Enter the mass value
12 lb = 192 oz
019200 ⇒ 192.00 oz
Press ENTER key
000000
Refer to “Note 6”
524030
For example:
5 ⇒ minimum division
2 ⇒ 0._0.00
4 ⇒ “ lb ”
0 ⇒ full range / 0 ⇒ multi-interval
3 ⇒ save at the third position
Press ENTER key
12. 0.05 lb
The display shows the max. capacity of the scale + minimum division set preciously for 2 seconds., then back to upper level.
Users can either exit the setting or continue to modify it
CSP 00
C key ⇒ Clear all parameters
ENTER key ⇒ Press to confirm
MS key ⇒ Back to CSP 02

2-1-3 Dividing Point Setting of Each Unit CSP03


CSP 03
Press Enter key
unit 0
Select unit parameter
unit 1
Press Enter key
002500
Enter "the 1st dividing point"
003000
Press Enter key
010000
Enter "the 2nd dividing point"
009000
Press Enter key
CSP 03
Flow the steps to finish the rest of the setting
After all dividing points has been set, enter the parameter "00"
CSP 00
Press Enter key to complete the dividing point setting
01 CSP
Select the unit intended to set dividing point:
All units set in CSP 02 and CSP 01 can be set dividing point. Refer to "Note 1" about unit parameter.
Screen displays the default of the first point:
Dual range ⇒ dividing point 1/2 full scale
Triple range ⇒ dividing point 1/6 full scale
2/3 full scale
Enter the 1st dividing point intended:
Only dual and triple range models can do the 1st dividing point setting.
Screen displays the default of the first point:
Triple range ⇒ dividing point 1/6 full scale
2/3 full scale
Enter the 2nd dividing point intended:
Only triple range model can do the 2nd dividing point setting.
C key ⇒ Clear all parameters
ENTER key ⇒ Press to confirm
MS key ⇒ Back to CSP 03

- Setting through CSP 02 and CSP 01, if the model is dual range, the original dividing point is 1/2 full scale; if the model is triple range, the original dividing point is 1/6 or 2/3 full scale. The dividing point of each unit can be re-set in CSP 03.
- After completed CSP 03, if CSP 02 or CSP 01 is re-set again, the dividing point will recover the original default.

2-2 Weight Calibration 02 CAL


02 CAL
Press TARE key
CAL 00
Input a parameter “00”, “01”, or ”02”
CAL 00
After input “00”, press ENTER key to return to the upper level. (Exit from weight calibration)
02 CAL
C key ⇒ Clear all parameters
ENTER key ⇒ Press to confirm

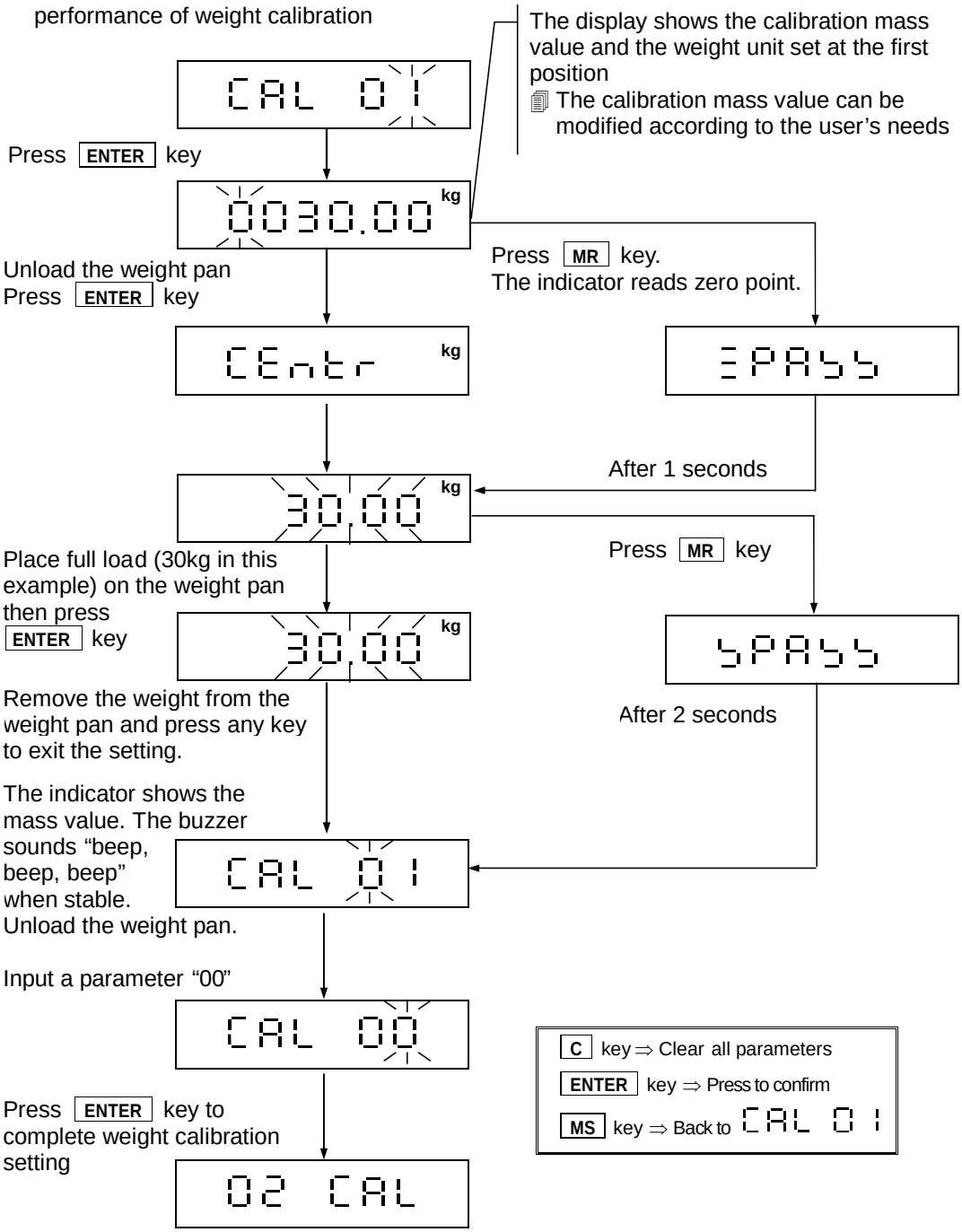
CAL 00 ⇒ Return to Upper Level

CAL 01 ⇒ Weight Calibration Setting

CAL 02 ⇒ Manufacturing Location Gravity Setting

2-2-1 Weight Calibration Setting CAL 01

The value of the mass for weight calibration is better equal to the max. capacity for better performance of weight calibration


The display shows the calibration mass value and the weight unit set at the first position
The calibration mass value can be modified according to the user's needs
CAL 01
Press ENTER key
0030.00 kg
Unload the weight pan
Press ENTER key
Press MR key.
The indicator reads zero point.
CEntr kg
ZPASS
After 1 seconds
30.00 kg
Press MR key
Place full load (30kg in this example) on the weight pan then press ENTER key
30.00 kg
SPASS
Remove the weight from the weight pan and press any key to exit the setting.
After 2 seconds
The indicator shows the mass value. The buzzer sounds "beep, beep, beep" when stable.
Unload the weight pan.
CAL 01
Input a parameter "00"
CAL 00
Press ENTER key to complete weight calibration setting
02 CAL
C key ⇒ Clear all parameters
ENTER key ⇒ Press to confirm
MS key ⇒ Back to CAL 01

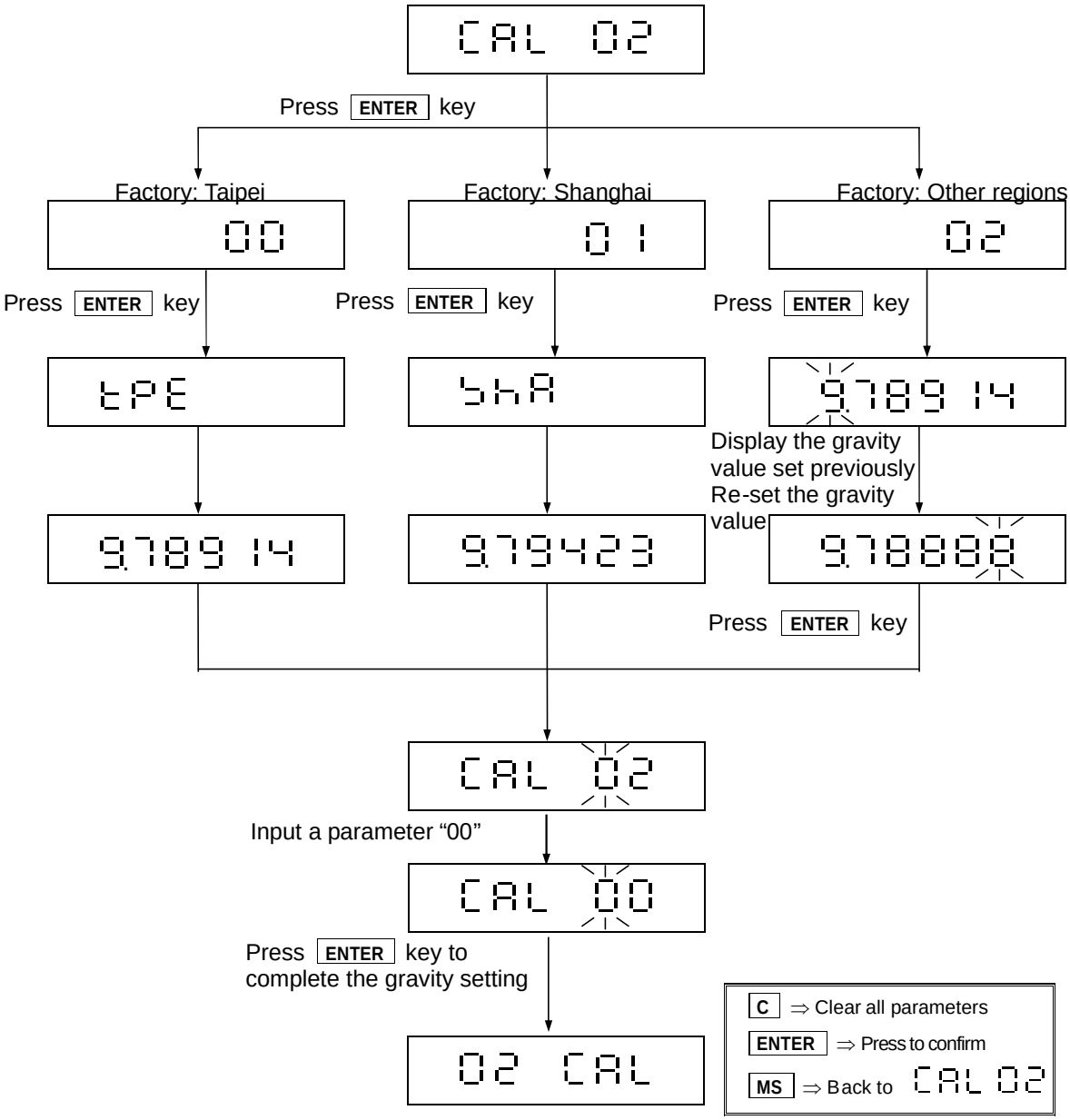
2-2-2 Manufacturing Location Gravity Setting CAL 02

- The gravity value is between the equator and the polar region.

  Gravity value at the equator G_E = 9.7803184558 m/sec^2

  Gravity value at the polar region G_P = 9.8321772792 m/sec^2

  Taipei □ 9.78914 m/sec^2 Shanghai □ 9.79423 m/sec^2



2-3 Linearity Calibration 03 CLn

- After completing the linearity calibration, the weight calibration needs to be re-done again.
- The weight value for linearity calibration should be at least equal to the weight value for weight calibration.
- The maximum point of linearity calibration is up to 9. The more points of linearity calibration are done, the better stability of linearity performance is.

* Multiple of the mass value

Example 1: linearity calibration for 15kg (the point of linearity is 5)

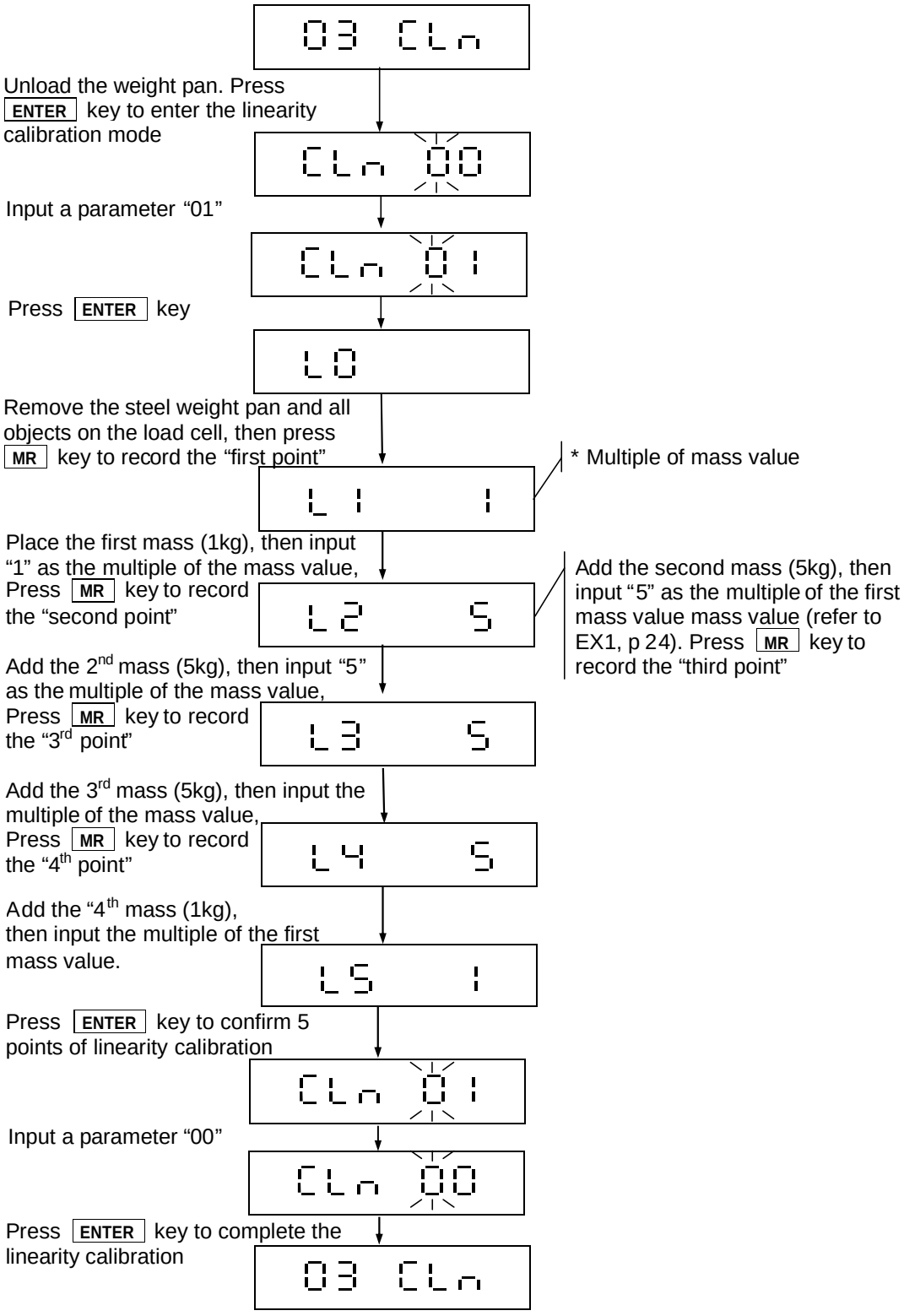
1. Remove all objects on the load cell then press the MR key to recode the “first point”
2. If the weight of the first mass is 1kg (the first mass value must be a factor of the full capacity, ex: 1, 3 or 5), the multiple of the mass is 1. Press MR key to record the “second point”.
3. If the weight of the second mass is 5kg, the second mass is 5 times value of the first mass. Input 5 and press MR key to record the “third point”.
4. The weight of the third mass is 5kg, the third mass is 5 time value of the first mass. Input 5 and press MR key to record the “fourth point” and save the setting.
5. The weight of the third mass is 5kg, the third mass is 5 time value of the first mass. Input 5 and press MR key to record the “fourth point” and save the setting.
6. The weight of the third mass is 1kg, the third mass is 1 time value of the first mass. Input 1 and press ENTER key to record the “fifth point” and save the setting.

Note:

During linearity calibration step L0, or L 1, press **ENTER** key to abort the setting.

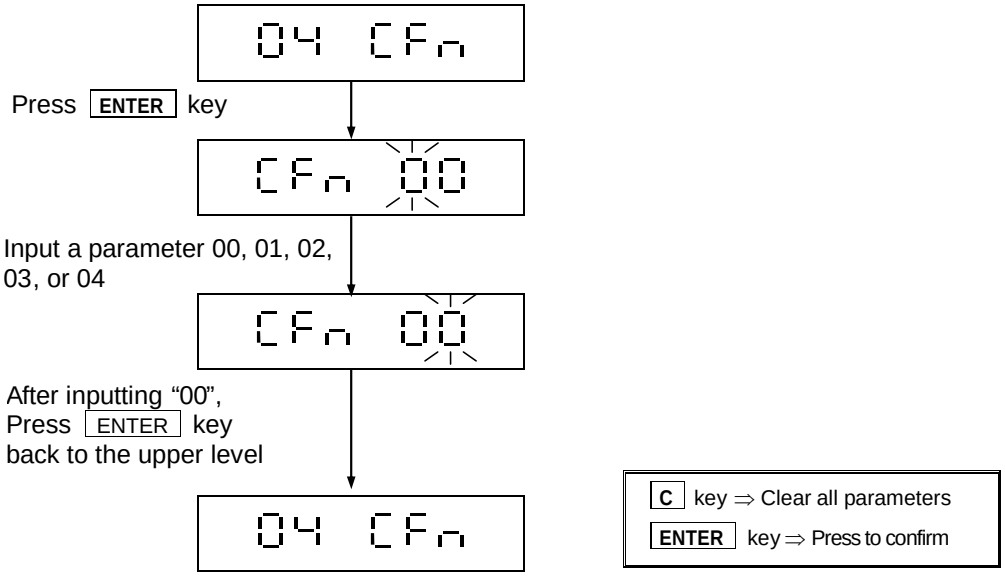
During linearity calibration step L2, L3, L4, L5, L6, L7 or L8,, press **ENTER** key to save 2, 3, 4, 5, 6, 7, or 8 points linearity calibration and exit the setting.

During linearity calibration step L8, press either MR to save 9 points linearity calibration and exit the setting.


03 CLn
Unload the weight pan. Press ENTER key to enter the linearity calibration mode
CLn 00
Input a parameter “01”
CLn 01
Press ENTER key
L0
Remove the steel weight pan and all objects on the load cell, then press MR key to record the “first point”
L1 1
* Multiple of mass value
Place the first mass (1kg), then input “1” as the multiple of the mass value,
Press MR key to record the “second point”
L2 5
Add the second mass (5kg), then input “5” as the multiple of the first mass value mass value (refer to EX1, p 24). Press MR key to record the “third point”
Add the 2nd mass (5kg), then input “5” as the multiple of the mass value,
Press MR key to record the “3rd point”
L3 5
Add the 3rd mass (5kg), then input the multiple of the mass value,
Press MR key to record the “4th point”
L4 5
Add the “4th mass (1kg), then input the multiple of the first mass value.
L5 1
Press ENTER key to confirm 5 points of linearity calibration
CLn 01
Input a parameter “00”
CLn 00
Press ENTER key to complete the linearity calibration
03 CLn

2-4 Function Setting 04 CFn

- Parameter setting for the approval model CFn 01
- Zero point tracking range CFn 02
- Parameter setting for 24C08 CFn 03
- Tuning on zero range setting CFn 04


04 CFn
Press ENTER key
CFn 00
Input a parameter 00, 01, 02, 03, or 04
CFn 00
After inputting "00", Press ENTER key back to the upper level
04 CFn
C key ⇒ Clear all parameters
ENTER key ⇒ Press to confirm

CFn 00 ⇒ Back to Upper Level

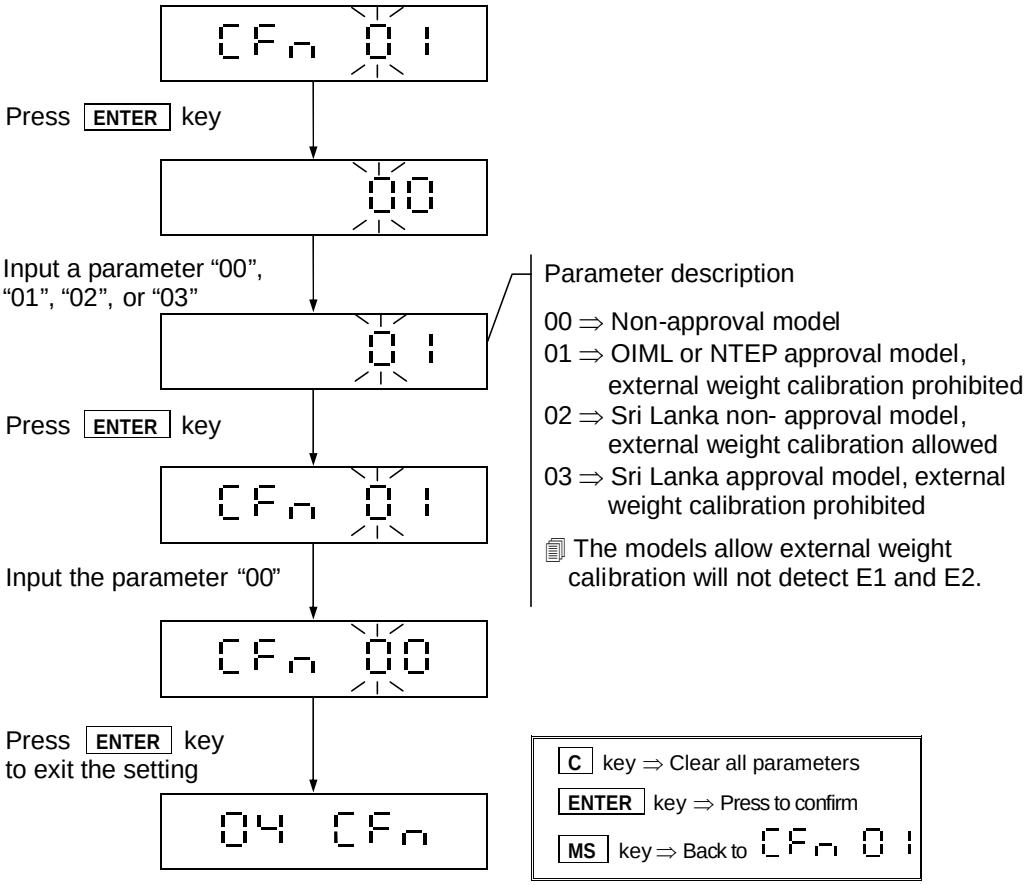
CFn 01 ⇒ Parameter Setting for the Approval Model

CFn 02 ⇒ Zero Point Tracking Range

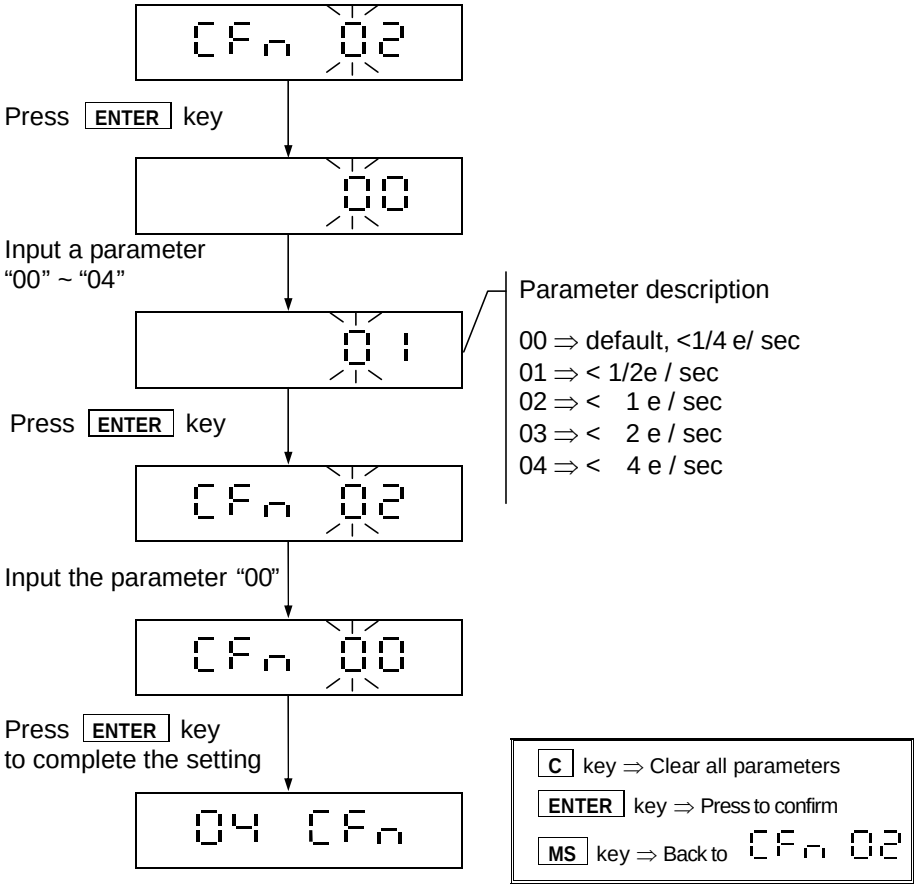
CFn 03 ⇒ Parameter Setting for 24C08

CFn 04 ⇒ Tuning On Zero Range Setting

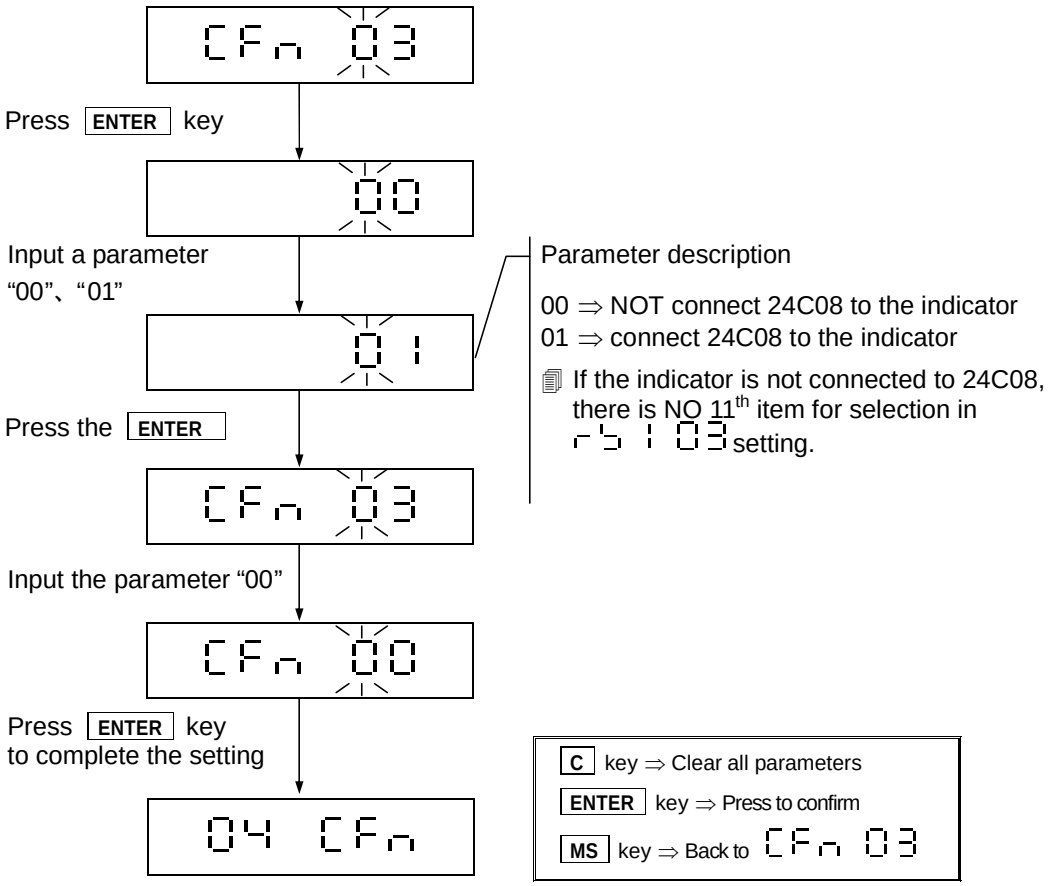
2-4-1 Parameter Setting for the Approval Model CFn 01


CFn 01
Press ENTER key
00
Input a parameter “00”, “01”, “02”, or “03”
01
Parameter description
00 ⇒ Non-approval model
01 ⇒ OIML or NTEP approval model, external weight calibration prohibited
02 ⇒ Sri Lanka non- approval model, external weight calibration allowed
03 ⇒ Sri Lanka approval model, external weight calibration prohibited
The models allow external weight calibration will not detect E1 and E2.
Press ENTER key
CFn 01
Input the parameter “00”
CFn 00
Press ENTER key to exit the setting
04 CFn
C key ⇒ Clear all parameters
ENTER key ⇒ Press to confirm
MS key ⇒ Back to CFn 01

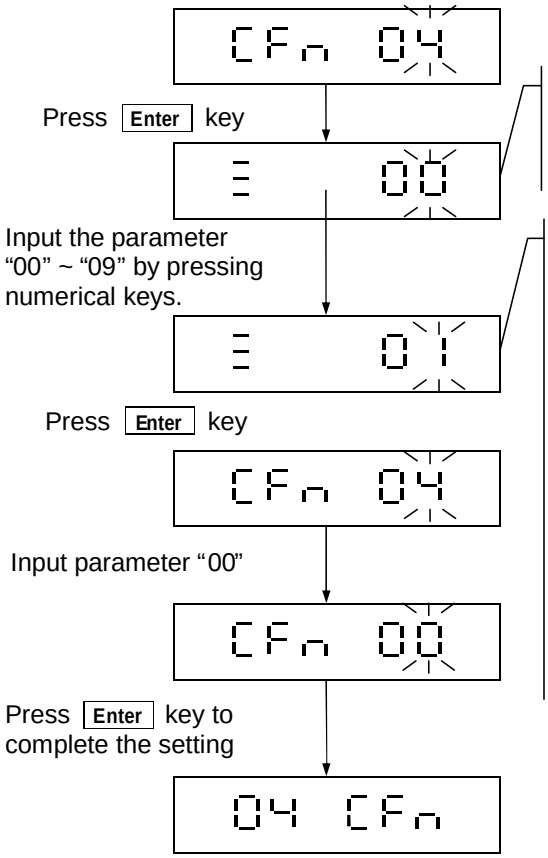
2-4-2 Zero Tracking Range Setting CFn 02


CFn 02
Press ENTER key
00
Input a parameter
"00" ~ "04"
01
Parameter description
00 ⇒ default, <1/4 e/ sec
01 ⇒ < 1/2e / sec
02 ⇒ < 1 e / sec
03 ⇒ < 2 e / sec
04 ⇒ < 4 e / sec
Press ENTER key
CFn 02
Input the parameter "00"
CFn 00
Press ENTER key
to complete the setting
04 CFn
C key ⇒ Clear all parameters
ENTER key ⇒ Press to confirm
MS key ⇒ Back to CFn 02

2-4-3 Parameter Setting for 24C08 CFn 03


CFn 03
Press ENTER key
00
Input a parameter
"00"、"01"
01
Parameter description
00 ⇒ NOT connect 24C08 to the indicator
01 ⇒ connect 24C08 to the indicator
If the indicator is not connected to 24C08, there is NO 11th item for selection in rS 1 03 setting.
Press the ENTER
CFn 03
Input the parameter "00"
CFn 00
Press ENTER key
to complete the setting
04 CFn
C key ⇒ Clear all parameters
ENTER key ⇒ Press to confirm
MS key ⇒ Back to CFn 03

2-4-4 Tuning On Zero Range Setting CFn 04



Turning on zero range setting:

Screen displays the parameter set previously

Turning on zero range setting:

Use ON/ZERO or UNITS key to input parameter:
Default setting = 0 **(OIML or NTEP Proved Model)**
Default setting = 9 **(Non-approval Model)**

- 00 ⇒ Zero range: ± 10% full scale
- 01 ⇒ Zero range: ± 20% full scale
- 02 ⇒ Zero range: ± 30% full scale
- 03 ⇒ Zero range: ± 40% full scale
- 04 ⇒ Zero range: ± 50% full scale
- 05 ⇒ Zero range: ± 60% full scale
- 06 ⇒ Zero range: ± 70% full scale
- 07 ⇒ Zero range: ± 80% full scale
- 08 ⇒ Zero range: ± 90% full scale
- 09 ⇒ Zero range: ± 100% full scale

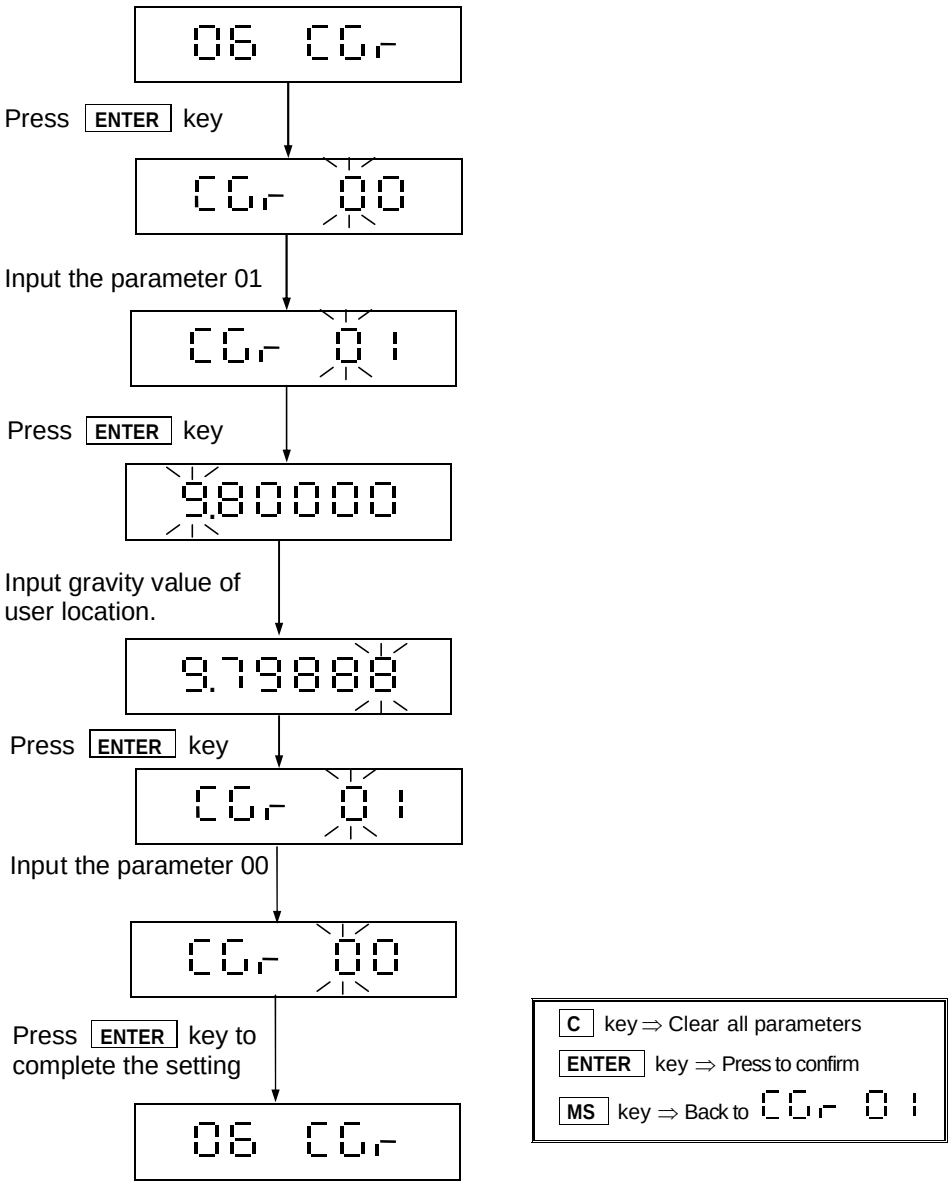
C key ⇒ Clear all parameters

ENTER key ⇒ Press to confirm

MS key ⇒ Back to CFn 04

- OIML or NTEP approved model (the parameter set as "1" in CFn 02)
  ⇒ Turning on zero range: ± 10% full scale
- Non-approved model (the parameter set as "0" in CFn 02)
  ⇒ Turning on zero range: ± 100% full scale

2-5 Gravity Setting 06 CGr



The gravity value setting must be within gravity value at the equator and pole region.

Gravity value at the equator: G_E = 9.7803184558 m/sec^2

Gravity value at the Pole region: G_P = 9.8321772792 m/sec^2

Taipei □ 9.78914 m/sec^2 Shanghai □ 9.79423 m/sec^2

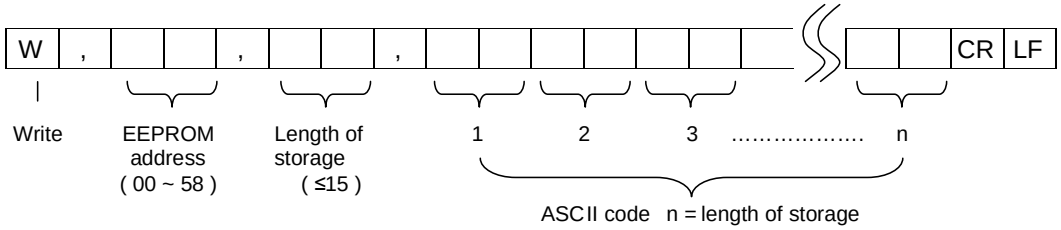
Appendix 1 RS232 SERIAL INTERFACE

RS232 Command format:

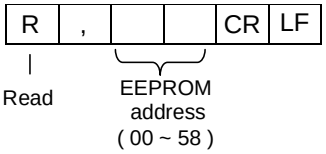
(1) The Host (PC) writes the data to the EEPROM of Slave (Scale).
(2) The Host (PC) reads the data in the EEPROM of Slave (Scale), and the Slave (Scale) has the data feedback to the host (PC).

Content planning

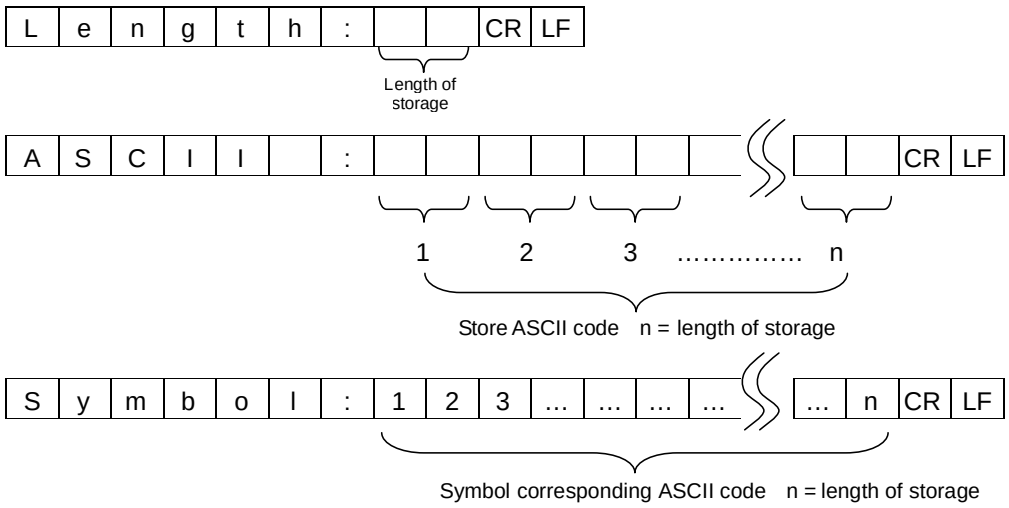
(1)



(2)



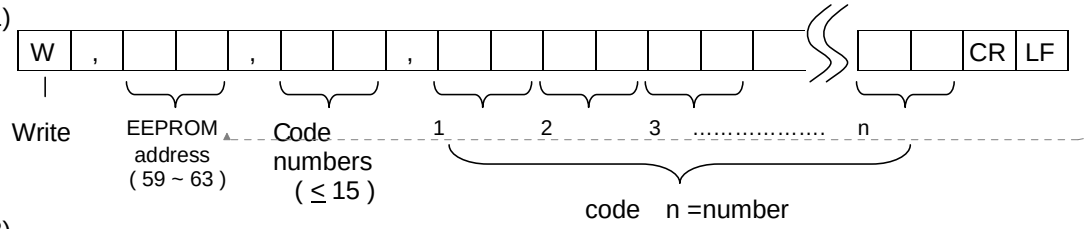
Write above two commands to the Host (PC), the Slave has the following format feedback to the Host (PC).


L e n g t h : CR LF
Length of storage
A S C I I : CR LF
1 2 3 …… n
Store ASCII code n = length of storage
S y m b o l : 1 2 3 … … … … … n CR LF
Symbol corresponding ASCII code n = length of storage

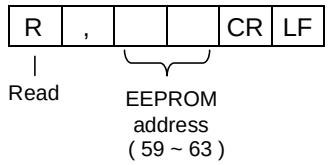
Code	First EEPROM address	Item		Final EEPROM address
00	00	Gross		01
01	02	Net		03
02	04	Tare		05
03	06	Pre Tare		07
04	08	Target Weight		09
05	10	Range		11
06	12	High Limit		13
07	14	Low Limit		15
08	16	Percent (%)		17
09	18	**EEPROM address**	Weight units	24
		19	First unit EEPROM address	
		20	Second unit EEPROM address	
		21	Third unit EEPROM address	
		22	Forth unit EEPROM address	
		23	Fifth unit EEROM address	
10	25	Time		26
11	27	Date		28
12	29	**EEPROM address**	Lo、Ok、Hi status	33
		30	Lo EEPROM address	
		31	Ok EEPROM address	
		32	Hi EEPROM address	
13	34	**EEPROM address**	Stable (Unstable) sign	37
		35	Stable sigh EEPROM address	
		36	Unstable sign EEPROM address	
14	38	Accumulations quantity		39
15	40	Accumulations total weight		41
16	42	Check the x weight		43
17	44	User’s definition 1		
18	45	User’s definition 2		
19	46	User’s definition 3		
20	47	User’s definition 4		
21	48	User’s definition 5		
22	49	User’s definition 6		
23	50	User’s definition 7		
24	51	User’s definition 8		
25	52	User’s definition 9		
26	53	User’s definition 10		
27	54	User’s definition 11		
28	55	User’s definition 12		
29	56	User’s definition 13		
30	57	User’s definition 14		
31	58	User’s definition 15		

Format

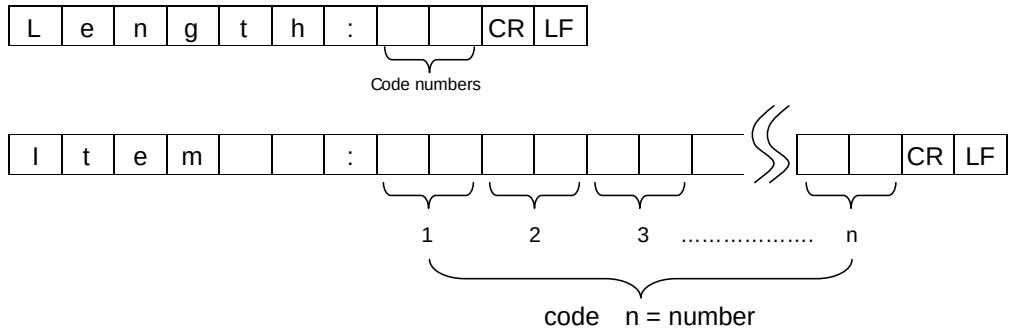
(1)



(2)



Write above two commands to the Host (PC), the Slave has the following format feedback to the Host (PC).



EEPROM address	Format	Transmission
59	Simple Format	Press “Print” button in Simple mode
60	Limit Format	Press “Print” button in Limit mode
61	Target Format	Press “Print” button in Target mode
62	Transmission of accumulation clear	Press “Enter” button
63	Control code	Transmit one time when turn on the scale

Code function

Code+80 ⇒ Do not print the first and final letters

Code+40 ⇒ Display zero by blank

Code+B0 ⇒ Do not print the first and final letters and display zero by blank

Example:

Tare Code ⇒ 03

03+80 = 83 ⇒ Do not print the first and final letters of Tare

03+40 = 43 ⇒ Display zero by blank, such as 000.00kg

03+B0 = B3 ⇒ Do not print the first and final letters, and display zero when the content of Tare value is blank.

Command Mode

Command Format A

Host | Command |

Slave | Command |

MZ	Zero	SM	Manually transmit
MT	Tare	SO	Command mode
MG	Gross weight	UA	Switch to the first unit
MN	Net weight	UB	Switch to the second unit
MM	Switch operation mode	UC	Switch to the third unit
CT	Clear Tare value	UD	Switch to the forth unit
CP	Clear Pre Tare value	UE	Switch to the fifth unit
SA	Auto transmit	%	Stop continuous transmission and enter the command mode
SC	Continuous transmission		

Note : UA ~ UE settings are dependent on the model of the scale

Command Format B

Host | Command |

Slave | Data |

RW	Read current weight	RH	Read Gross (simple)
RG	Read Gross weight	RI	Read Net (simple)
RN	Read Net weight	RJ	Read comparison situation + current display of weight (simple)
RT	Read Tare	RK	Read comparison situation + Gross (simple)
RB	Read current display of weight (simple)	RL	Read comparison situation + Net (simple)
RE	Read Pre Tare		

Note : i. add % before the command to read continuously
ii. add # before the command to transmit a stable value

Read Weight-comparison setting value RS○○□□

○○: Group number(00 ~ 09) □□: Setting items

LO	Read LO setting value	RG	Read Range setting value
HI	Read HI setting value	PT	Read Pre-tare setting value
OK	Read Target setting value		

Note : There is no group number in PT (PT only has one group setting)

EX: RSPT < CR > < LF > Read Pre-tare setting value

ANS: RSPTXXXXXX < CR > < LF >

EX: RS03RG < CR > < LF > Read Range setting value

ANS: RS03RGXXXXXX < CR > < LF >

Command Format C

Host	Command+ Data	
Slave		Command+ Data

Write the weight comparison value WS○○□□XXXXXX

○○: Group number(00 ~ 09) □□: Setting items

LO	Write LO setting value	RG	Write Range setting value
HI	Write HI setting value	PT	Write Pre-tare setting value
OK	Write Target setting value		

Note : There is no group number in PT (PT only has one group setting)

EX: WSPTXXXXXX < CR > < LF > Write Pre-tare setting value

ANS: WSPTXXXXXX < CR > < LF >

EX: WS03RGXXXXXX < CR > < LF > Write Range setting value

ANS: WS03RGXXXXXX < CR > < LF >

- Error messages:

  E1: Wrong command
  E2: Command format error (Wrong parameters)
  E3: Command not recognized

Output Data Format

Weight format

Gross	S	T	,	G	S	,	+	0	1	2	3	4	5	6	7	SP	SP	o	z		
Net	S	T	,	N	T	,	+	1	.	2	3	.	4	5	6	t	l	.	g		
Tare	S	T	,	T	R	,	+	0	1	2	.	3	4	5	6	SP	SP	k	g		
Plus OL	O	L	,	G	S	,	+	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	CR	LF
Minus OL	O	L	,	G	S	,	-	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP	SP		
Unstable	U	S	,	G	S	,	+	0	1	2	3	4	.	5	6	SP	SP	l	b		
Pre Tare	S	T	,	P	T	,	+	0	1	2	3	4	5	6	7	SP	SP	SP	g		

Simple format

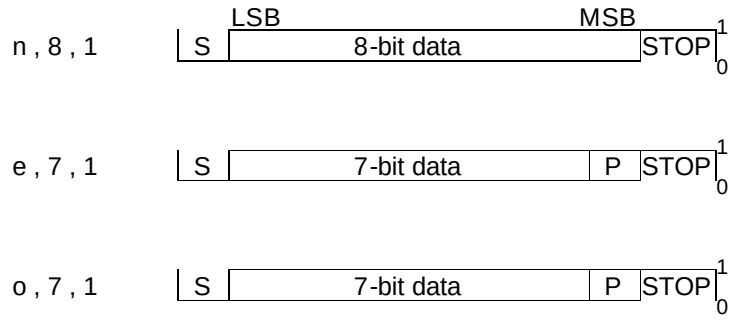
Gross	+	0	1	2	3	4	5	6	7		
Net	+	1	.	2	3	.	4	5	6		
Tare	+	0	1	2	.	3	4	5	6	CR	LF
Plus OL	+	SP	SP	SP	SP	SP	SP	SP	SP		
Minus OL	-	SP	SP	SP	SP	SP	SP	SP	SP		

Comparison status + Simple format

Byte0	Byte1	Byte2	+/-	1	.	2	3	.	4	5	6	CR	LF

Byte0 : HI 30H/31H
Byte1 : OK 30H/31H
Byte2 : LO 30H/31H

Serial Data Transfer/Receive Format



Notes:

S : Start bit
STOP: Stop bit
P : Parity bit

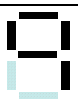
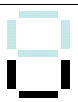
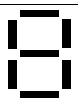
Appendix 2 BUTTON CODE

MODE	PRINT	NET / GROSS	ON / OFF
OK	RANGE	PRE-TARE	ZERO
HI	LO	TARE	C
UNITS	MS	MR	ENTER

⇒

08	07	06	ON/OFF
18	17	16	15
38	37	36	35
28	Exit the code	26	25

Appendix 3 7-SEGMENT DISPLAY CHARACTERS

Digit	7 segments letter	Alphabet	7 segments letter	Alphabet	7 segments letter
0		A		N	
1		B		O	
2		C		P	
3		D		Q	
4		E		R	
5		F		S	
6		G		T	
7		H		U	
8		I		V	
9		J		W	
		K		X	
		L		Y	
		M		Z	